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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/821,927	03/30/2001	Wei Liu	SP01-070	7675

22928 7590 06/03/2003

CORNING INCORPORATED  
SP-TI-3-1  
CORNING, NY 14831

EXAMINER
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NGUYEN, TAM M

ART UNIT	PAPER NUMBER
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1764

DATE MAILED: 06/03/2003

8

Please find below and/or attached an Office communication concerning this application or proceeding.

428

# Office Action Summary

Application No.

09/821,927

Applicant(s)

LIU ET AL.

Examiner

Tam M. Nguyen

Art Unit

1764

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 26 February 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-31 and 36-39 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-31 and 36-39 is/are rejected.
- 7) ☒ Claim(s) 4 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>3</u> . | 6) <input type="checkbox"/> Other: _____                                    |

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## **DETAILED ACTION**

### ***Response to Amendment***

The rejection of claims 1-31 under 35 USC § 112 is withdrawn by the examiner in view of the amendments filed on February 3 and February 26, 2003.

The rejection of claims 1-31 under 35 USC § 102 and 103 is withdrawn by the examiner in view of the amendment filed on February 3 and February 26, 2003.

A new non-final Office Action follows. Therefore, application's arguments will not be addressed.

### ***Claim Objections***

Claim 4 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The limitation in claim 4 is already in claim 1.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

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1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-15, 18-21 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over D.S. Soni and B.L. Crynes, "A comparison of the Hydrodesulfurization and Hydrodenitrogenation Activities of Monolith Alumina Impregnated with Cobalt and Molybdenum and a Commercial Catalyst" *ACS Symp. Ser.*, 156 (1981), 208-224 in view of S.Irandoust and O. Gahne "Competitive hydrodesulfurization and hydrogenation in a Monolithic Reactor", *AIChE Journal*, 36 (5), pp 746-752 (1990).

Soni discloses a process for removing heteroatoms by contacting a liquid hydrocarbon with hydrogen in the presence of monolith alumina catalyst having a honeycomb configuration and the catalyst comprises Alumina, Mo, and Co. The liquid hydrocarbon comprises oxygen, nitrogen, and about 0.47 wt. % of sulfur compounds. The process is operating at a temperature of 371° C and at a pressure of 1500 psia (105 bars). See entire reference

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Soni does not specifically disclose that the superficial liquid linear velocity of said feed stream is greater than 0.02 cm/s or 0.2 cm/s. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Soni by operating the process at the superficial liquid linear velocity of greater than 0.02 cm/s or 0.2 cm/s as taught by Irandoust (see page 748) because Irandoust teaches that it is effective to operating a hydrodesulfurization process at an average linear velocity of from  $1.76 \times 10^{-2}$  to  $3.5 \times 10^{-2}$  m/s (1.76 to 3.5 cm/s).

Soni does not specifically disclose that the one-pass conversion of a heteroatom is greater than 50%. However, the modified process of Soni is similar to the process of claim 1 in terms of feedstock, catalyst, and liquid linear velocity of the feed. Therefore, it would be expected that the modified process of Soni would have the claimed conversion.

Soni does not specifically disclose the boiling point or the type of the hydrocarbon feed. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Soni by using the claimed feed because the type of hydrocarbon feed or the boiling point of the feed is not crucial to the process of Soni. Therefore, one of skill in the art would employ any hydrocarbon feed including the claimed feed in the process of Soni. Consequently, when the claimed feed is employed in the Soni process, the hydrocarbon product would be the same as the claimed hydrocarbon product (e.g., diesel fuel).

Soni does not specifically disclose that the treated hydrocarbon is separated a sour gas containing hydrogen sulfide. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Soni by separating

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the hydrocarbon product from hydrogen sulfide because one of skill in the art would separate hydrogen sulfide the hydrocarbon product if one desires to obtains a pure product.

Claims 16, 17, 22, 23, 25, 27-31 and 36-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over references as applied to claims 1-15 above, and further in view of GB-963,941.

Sonic does not specifically disclose the ratio of hydrogen to liquid feed. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Soni by using the claimed ratio because it is effective to use an amount of hydrogen greater than the stoichiometric amount of hydrogen and the claimed amount of hydrogen used is greater than the stoichiometric amount. Therefore, one of skill in the art would use any amount of hydrogen which is greater than the stoichiometric amount (including the claimed amount) in the process of Soni.

Soni does not specifically disclose that the LHSV is greater than about  $0.1 \text{ h}^{-1}$  or  $0.7 \text{ h}^{-1}$ . However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Soni by operating the process at the LHSV of from 0.2-10 as taught by the GB reference (see col. 2, line 40) because the GB reference discloses that it is effective to operate a process for removing heteroatoms from a hydrocarbon feed by employing a LHSV at a rate of from 0.2 to 10.

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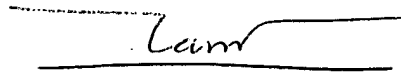
***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tam M. Nguyen whose telephone number is (703) 305-7715.

The examiner can normally be reached on Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 703-308-6824. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-5408 for regular communications and (703) 305-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



Tam M. Nguyen  
Examiner  
Art Unit 1764

TN  
May 31, 2003